



Superfund At Work

Hazardous Waste Cleanup Efforts Nationwide

Chisman Creek Site Profile

Site Description:
Diipitsinas small suburban area
in York County, Virginia

Site Size: 27 acres

Primary Contaminants
Heavy metals (vanadium, nickel,
selenium)

Potential Range of Health Risks:
Direct contact with contaminants may
have caused central nervous system
disorders

Nearby Population Affected:
500 to 1,000 people within one mile

Ecological Concerns:
Contamination of the Chisman Creek
Coastal Basin

Year Listed on NPL: 1963

EPA Region: 3

State: Virginia

Congressional District: 1

Success in Brief

EPA and Virginia Power Shine at York County Site

The Chisman Creek hazardous waste site in York County, Virginia was once contaminated with by-products generated from a nearby power station. Today York County residents play baseball and soccer on newly-constructed fields covering the former site. The US. Environmental Protection Agency (EPA), the Commonwealth of Virginia, and Vii Power worked together to make the area safe for public use. Under two cooperative agreements, known as consent decrees, Vii Power:

- Designed a \$10 million site cleanup;
- Supplied municipal water service to affected residents;
- Constructed a drainage and water treatment plant to remove contaminants from area ground water; and
- Installed state-of-the-art, lighted baseball and soccer fields on top of the cleaned up Superfund site.

The Site Today

In May 1991, the Yorktown community held a ribbon cutting ceremony to celebrate the successful cleanup of the Chisman Creek site and the opening of recreational fields on the property.

Through the cooperative efforts of EPA, Viia Power, the Commonwealth of Virginia, and York County officials, the Chisman Creek property has been restored for unrestricted use. Based on community needs, the property has been converted into three soccer fields and two baseball fields. Comprehensive site monitoring and ground water treatment are ongoing: When the monitoring program is complete, the Chisman Creek site will be deleted from EPA's list of hazardous waste sites.



Photo courtesy of Virginia Power

From Fly Ash to fly Balls -Youngsters prepare to play ball on a site once contaminated with fly ash, cinders and the residues from burning petroleum coke and coal.

A Site Snapshot

The Chisman Creek site is located in a small residential area in York County, Virginia. Approximately 500 to 1,000 people live within a one-mile radius.

More than 1.3 million cubic yards of fly ash contaminated 27 acres of land and portions

of the 520-acre watershed of the Chisman Creek Coastal Basin on the Virginia Peninsula.

Studies conducted in 1980 by the Virginia State Water Control Board and the Virginia State Board of Health revealed contamination by sulfates and heavy metals, including vanadium, on the waste site and in surrounding areas.

Shallow residential wells near the site, as well as three ponds, a freshwater tributary of Chisman Creek, and Chisman Creek itself were

More than 1.3 million cubic yards of fly ash contaminated the Chisman Creek Coastal Basin

contaminated with vanadium and other heavy metals. In 1980, the state closed down contaminated residential wells after finding these contaminants in the water.

Prolonged ingestion of drinking water polluted by heavy metals could have caused health problems, however, there were no reported conditions associated with this site.

Team Efforts Transf

Fly Ash Seeps Into Nearby Drinking Water

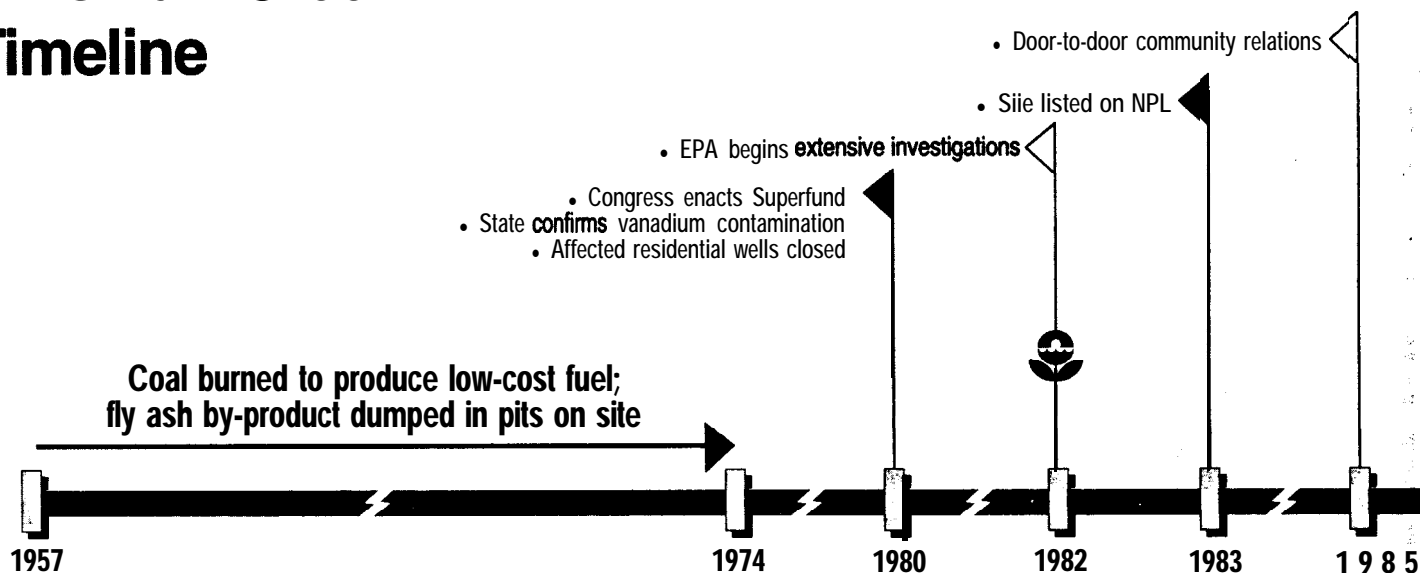
From 1957 until 1974, Virginia Power Company (formerly Virginia Electric Power Company) mixed and burned equal portions of petro-

Coal burning operations produced fly ash, a solid waste with the texture of talcum powder

leum coke and coal in an effort to produce low-cost fuel for electricity.

These coal burning operations produced residues, cinders, and fly ash – a solid waste similar in texture to talcum powder. Large quantities of fly ash – totaling over 1.3 million cubic yards – were transported by a private hauler and deposited into four separate disposal pits that encompass the Chisman Creek site.

Chisman Creek Timeline



Transform Waste Site into Community Recreation Facility

Heavy rains washed the fly ash and other sediments from the disposal pits into Chisman Creek, its tributaries, and ground water within and around the disposal area. Eventually, the contamination seeped into nearby residential drinking wells.

In 1980, the Virginia State Water Control Board (VWCB), the Virginia State Board of Health, and the Virginia Institute of Marine Sciences (VIMS) responded to local complaints of discolored well water.

Subsequent investigations confirmed the presence of vanadium as well as other metals and sulfates in the wells. The state then shut down the affected wells.

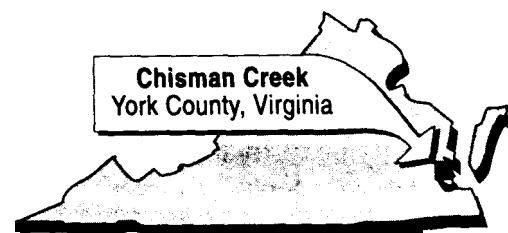
In December 1980, Congress enacted the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) establishing the

"Superfund" program to clean up the nation's hazardous waste sites. One year later, EPA was asked by state officials to evaluate the Chisman Creek Coastal Basin.

EPA conducted investigations throughout 1982 and part of 1983. These studies determined the

Comprehensive site studies aimed to prevent exposure to fly ash and contaminated water

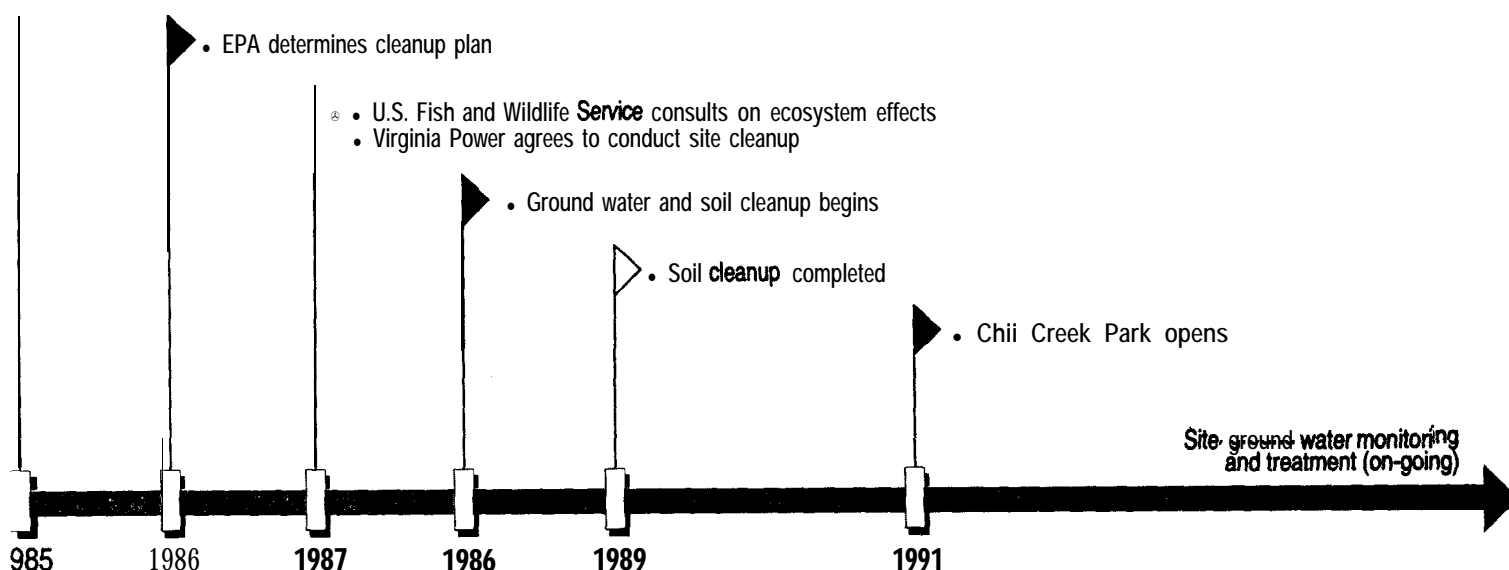
nature and extent of contamination resulting from the fly ash and other contaminants. In September 1983, the Chisman Creek site was included on the National Priorities List (NPL), EPA's roster of uncontrolled or abandoned hazardous waste sites requiring cleanup under the Superfund program.



Early in the investigative process, EPA contacted the Centers for Disease Control and Prevention (CDC) to obtain information about possible health effects associated with the contaminants. The CDC was confident that the shutdown of residential wells in 1980 significantly reduced exposure to contaminants from the site.

Site Restored to Productive, Valuable Land

EPA could then focus on finding ways to prevent direct exposure to the fly ash, protect the adjacent wetlands, and restore the area ground water. Due to the



unusual characteristics of vanadium, investigations continued until 1986.

EPA determined that the cleanup at the site would best be accomplished in two phases; the

**EPA consulted the
Centers for Disease
Control and Prevention
on the health effects
of vanadium**

first would address the contaminants in the four disposal pits and area ground water. The second phase would address the three ponds, a freshwater tributary, and Chisman Creek itself.

**Virginia Power Steps in
to Manage the Effort**

In 1987 and 1989, EPA successfully negotiated with Virginia Power to participate in the site cleanup.

Virginia Power started construction of the first cleanup phase in April 1988, and finished work in December 1989. In accordance with EPA's cleanup plan, Virginia Power:

- Connected homes affected by contaminated ground water to existing public water lines;
- Installed sub-surface drains to collect contaminated ground water for on-site **treatment**;
- Constructed a water treatment system to remove contaminants from the ground water;
- Installed a discharge pipe to release treated water from the

water treatment plant back into **Chisman Creek**;

- Controlled erosion by planting protective grasses to prevent contamination from being carried off site by surface water; and
- Covered three of the four disposal pits – two with soil and one with a clay cap – to prevent migration of or direct contact with the fly ash. The fourth disposal pit was used minimally and therefore did not need to be covered.

In addition, cleanup teams

constructed on-site water quality monitoring stations to ensure the effectiveness of the ground water cleanup.

**A Delicate
Ecosystem
Remains
Undisturbed**

Due to the fragile nature of the Chisman Creek ecosystem, EPA obtained assistance for the second phase of cleanup from the U.S. Fish and Wildlife Service to determine the effect of fly ash on the ponds, Chisman Creek, and the marine life in tributary waters.

In 1987, the U.S. Fish and Wildlife Service determined that the small amount of contamination detected did not justify

**Virginia Power
connected homes
affected by contaminated
ground water to existing
public water lines**

disturbing this delicate ecosystem. Cleanup teams could have

continued on page 5



Photo courtesy of Virginia Power

Once an environmental liability, the Chisman Creek area was posted with "Keep Out" signs.

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An Informed Community

Superfund community relations efforts are designed to keep citizens informed about site progress and to provide community input into site decisions.

In 1985, EPA and Virginia Power committed to keep the residents of York County involved in the Chisman Creek site cleanup. EPA representatives went door to door to notify local citizens about the site. After engineers developed remedial plans for the site, the community was given time to express concerns and ask questions.

During public meetings, EPA presented cleanup alternatives and discussed issues such

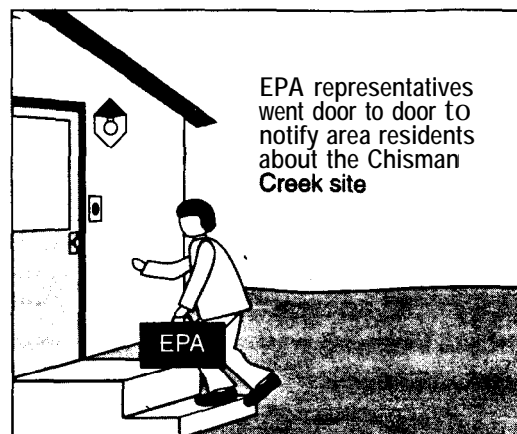
as health and ecological risks posed by site contamination, future land use, cleanup costs and procedures, Virginia Power's involvement, and community participation in site activities.

Further, EPA issued periodic press releases, frequently contacted local officials to update them on the site's status, and maintained information repositories at the York County Municipal Building, the Yorktown Public Library, and the Chesapeake Bay Foundation.

Throughout site cleanup activities, information centers for interested citizens were maintained at

the local elementary school, the State Department of Health in Richmond, and the EPA Regional office in Philadelphia.

EPA's staff also educated the local community about the procedures being taken to protect natural resources.



Team Efforts Transform Waste Site

continued from page 4

done more harm by inadvertently spreading contamination to unaffected areas. Based on this information, Virginia Power began designing phase two of the cleanup plan.

In 1989, Virginia Power installed surface water drainage controls to divert runoff into the existing water treatment system. Virginia Power also initiated a water quality, sediment quality, and monitoring program to track contamination levels.

Cleanup Effectiveness Is Assured

Comprehensive monitoring programs ensure that cleanup activities are effective and that the environment remains safe.

The U.S. Fish and Wildlife Service assisted in ecosystem evaluations

In December 1989, EPA and the state conducted a final construction inspection of the site. Officials verified the effectiveness of the clay cap, the drainage control measures, and the water treatment system.

A comprehensive monitoring program, as well as ground water treatment, will continue until cleanup goals are reached.

The Home Team Wins

Initially the proposed cleanup plan for the Chisman Creek Superfund site suggested that the site be fenced and use of the property be restricted.

Local residents, however, had previously used the site for recreational purposes such as motor biking, walking, and fishing and they objected to the placement of barbed wire around the former disposal pits.

As a result, Virginia Power and York County officials worked to convert the site into a county recreational facility.

The final conceptual design included a plan to create softball and soccer fields on top of the former disposal area. The recreational facility is now equipped with field lighting, a parking lot, and restrooms.

Chisman Creek is a model of what can be done to restore a Superfund site to an area of public pride. Virginia Power's experiences exemplify the need for responsible waste disposal practices and well-managed cleanup efforts.

Success at Chisman Creek

Coordinating the efforts of many state and local organizations, EPA and Virginia Power achieved an exceptional cleanup at the Chisman Creek site.

These efforts protected local citizens and a fragile **ecosystem**, surpassing anticipated goals.

Residents now gather to play baseball and soccer on the reclaimed land.

For additional copies of this or other Superfund At Work updates, contact the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161, telephone (703) 487-4650.

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